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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,256	04/05/2001	Stephen A. Empedocles	019916-004100US	4344

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EXAMINER

SMITH, ZANDRA V

ART UNIT PAPER NUMBER

2877

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/827,256

Applicant(s)

EMPEDOCLES ET AL.

Examiner

Zandra V. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 34-42 is/are allowed.
- 6) ☒ Claim(s) 1-4, 9, 10, 12-16, 19-23, 26, 28-31, 33, 43, 44, 46 and 49-52 is/are rejected.
- 7) ☒ Claim(s) 5-8, 11, 17, 18, 24, 25, 27, 32, 45, 47, 48, 53 and 54 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7-23-01.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claims 18 are objected to because of the following informalities: there is no antecedent for "drawing the array of bodies into the array of openings". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Regarding claim 23, the phrase "at least about" renders the claim(s) indefinite because the there is no indication as to what range of activity is covered by "about". See MPEP § 2173.05(b).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the

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reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 16, 20 are rejected under 35 U.S.C. 102(e) as being anticipated by *Ulmer (6,296,810 B1)*.

As to **claims 1**, Ulmer discloses an apparatus for DNA sequencing, comprising:
spatially restraining a first spectrally labeled body (col. 19, lines 1-5, 20-25, 34-40 and 50-60);
releasing a plurality of bodies in a fluid (col. 14, lines 27-30 and 51-57);
generating a first spectrum from the first body while the first body is spatially restrained (col. 15, line 60-col. 16, line 5);
dispersing the first spectrum across a sensor surface; and
identifying the first body for the dispersed first spectrum (col. 37, line 65-col. 38, line 1, col. 38, lines 51-64, col. 39, lines 11-34 and col. 41, lines 7-21 and lines 41-52).

As to **claim 2**, Ulmer discloses everything claimed, as applied above, in addition a plurality of bodies are released in a fluid and the first body is spatially separated from the other released bodies while the first spectrum is generated (col. 16, lines 5-25).

As to **claim 3**, Ulmer discloses everything claimed, as applied above, in addition the positioning step comprises advancing the first body into an opening sized to accommodate a single body (col. 16, lines 5-25 and col. 30, lines 10-50).

As to **claims 4, 9-10, 13, 31, and 33**, Ulmer fails to specifically state that the method is extended to multiple particles, however since the separates nucleotides are caused to fluoresce

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and the steps are repeated indefinitely until all nucleotides are examined, the limitations are inherently met (col. 15, line 60-col. 16, line 5 and col. 41, lines 50-55).

As to **claim 12**, Ulmer discloses everything claimed, as applied above, in addition the first and second bodies may be retrained by an energy beam (col. 19, lines 15-38).

As to **claims 21-23 and 52**, Ulmer discloses everything claimed, as applied above, in addition a focused laser beam may be used in the spatially restraining step, the focused laser beam is sized to restrain a single body, and the focused laser beam defines a trap wherein the size of the bodies is about half the size of the trap (col. 19, lines 11-38).

As to **claim 26**, Ulmer discloses everything claimed, as applied above, in addition excitation energy is directed toward the restrained body (col. 14, lines 5-15, col. 15, line 60-col. 16, line 5, and col. 38, lines 50-63).

As to **claim 28**, Ulmer discloses everything claimed, as applied above, in addition the spectrum is transmitted toward a sensor along an optical path and restraining energy is transmitted toward the body along a portion of the optical path (see fig. 9 and col. 41, lines 5-21).

As to **claims 29-30**, Ulmer discloses everything claimed, as applied above, in addition the restrained body is moved within the fluid by moving the fluid (col. 38, line 64-col. 39, line 10) or by sweeping restraining energy through the fluid (col. 30, lines 15-25).

As to **claims 43-44 and 50-51**, Ulmer discloses an apparatus for DNA sequencing, comprising:

a plurality of bodies released in a fluid, the bodies having labels for generating identifiable spectra (col. 16, lines 10-15);

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an energy transmitter emitting a focused laser beam to spatially restrain at least one body;
and

a sensor to receive spectrum from at least one body (col. 37, line 65-col. 38, line 1, col. 38, lines 51-64, col. 39, lines 11-34 and col. 41, lines 7-21 and lines 41-52).

As to **claim 46**, Ulmer discloses everything claimed, as applied above, in addition an excitation energy source is provided (col. 15, lines 60-68).

As to **claim 49**, Ulmer discloses everything claimed, as applied above, in addition an optical train is provided (see fig. 9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ulmer (6,296,810 B1)**.

As to **claims 14-15**, Ulmer discloses everything claimed, as applied above, with the exception 100 different bodies, however since the separates nucleotides are caused to fluoresce and the steps are repeated indefinitely until all nucleotides are examined, it would have been obvious to one having ordinary skill in the art at the time of invention to identify as many different bodies as are in the sample (col. 15, line 60-col. 16, line 5 and col. 41, lines 50-55).

Allowable Subject Matter

Claims 34-42 are allowable over the prior art of record.

Claims 5-8, 11, 17-18, 24-25, 27, 32, 45, 47-48, and 53-54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious, a plurality of spectrally labeled bodies simultaneously spatially restrained at an array of sites, drawing fluid into an array of opening and expelling fluid from the array of openings so as to sequentially restrain a plurality of bodies, a multi-well plate, drawing an array of bodies into an array of openings, restraining a plurality of bodies simultaneously, the restrained body generates a spectrum in response to the restraining energy, inhibiting transmission of restraining energy between first and second sites, a support with an array of sites, or a sensor coupled to the restraining energy beam to restrain a plurality of bodies along a line, in combination with the rest of the limitations of the claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sonek et al (5,631,141); Liu (6,159,749) ; and The School of Pharmacy, University of London (WO 94/08221).

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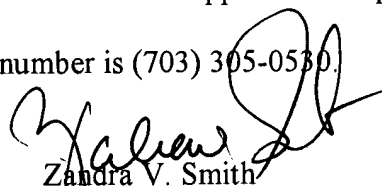
Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra V. Smith whose telephone number is (703) 305-7776.

The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703)308-4881. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0530.


Zandra V. Smith
Primary Examiner
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